

ABSTRACT OF THE DISCLOSURE

Embodiments of the present invention include hybrid composite materials comprising a cemented carbide dispersed phase and a cemented carbide continuous phase. The contiguity ratio of the dispersed phase of embodiments may be less than or equal to 0.48. The hybrid composite material may have a hardness of the dispersed phase that is greater than the hardness of the continuous phase. For example, in certain embodiments of the hybrid composite material, the hardness of the dispersed phase is greater than or equal to 88 HRA and less than or equal to 95 HRA and the hardness of the continuous phase is greater than or equal to 78 and less than or equal to 91 HRA.

Additional embodiments may include hybrid composite materials comprising a first cemented carbide dispersed phase wherein the volume fraction of the dispersed phase is less than 50 volume percent and a second cemented carbide continuous phase, wherein the contiguity ratio of the dispersed phase is less than or equal to 1.5 times the volume fraction of the dispersed phase in the composite material.

The present invention also includes a method of making a hybrid cemented carbide composite by blending partially and/or fully sintered granules of the dispersed cemented carbide grade with "green" and/or unsintered granules of the continuous cemented carbide grade to provide a blend. The blend may then be consolidated to form a compact. Finally, the compact may be sintered to form a hybrid cemented carbide.